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ESTABLISHMENT OF AN AFRICAN CENTRE OF METEOROLOGICAL APPLICATIONS FOR DEVELOPMENT (ACMAD): FEASIBILITY STUDY AND PROJECT DOCUMENT*

*This document is a revision of document E/ECA/Cm.11/15/Add.1 and E/ECA/CM.11/15/Add.1/Rev/1 discussed at the Twentieth session of the Commission/Eleventh meeting of the Conference of Ministers, Addis Ababa, 25-29 April 1985 on follow-up actions on resolutions and decisions adopted by the Nineteenth Session of the Commission and Tenth meeting of the Conference of Ministers.

A. IMPLEMENTATION OF RESOLUTIONS ON THE ENVIRONMENT ADOPTED AT THE TENTH MEETING OF THE ECA CONFERENCE OF MINISTERS, MAY 1984

Resolution 496 (XIX): Environment and Development in Africa

1. This is a four-part resolution resulting from the second meeting of the Joint Intergovernmental Regional Committee on Human Settlements and Environment held in January 1984, which is dealing with the following sections as reported on below:

Section I - Promotion of technical co-operation, information exchange, technology and expertise for combating desertification in Africa

2. ECA informed and sought the co-operation of UNEP and UNSO in the implementation of this resolution immediately after the ECA Conference of Ministers. ECA also submitted the resolution to the second meeting of the Economic and Social Council held in July 1984 which adopted its resolution 1984/72 on the matter. This resolution went on to the General Assembly at its 39th session which adopted its resolution 39/168 - Plan of Action to Combat Desertification on 17 December 1984; operative paragraph 9 reiterated the ECA and the ECOSOC resolutions by:

"Requesting the Governing Council of UNEP to examine, at its thirteenth session, the possibility of:

(a) The inclusion of reference to the United Republic of Tanzania in the terms of reference of the United Nations Sudano-Sahelian Office in order to enable that country to receive assistance in the implementation of programmes for combating desertification;

(b) The expansion of the scope of the work of the United Nations Sudano-Sahelian Office so as to enable it to assist the States members of the Southern African Development Co-ordination Conference in implementing the recommendations of the United Nations Environment Programme on combating desertification and drought, in the same way as the Office is currently assisting the State members of the Permanent Inter-State Committee on Drought Control in the Sahel."

Section II - Industrial environmental impact assessment (EIA)

3. Follow-up activities are being planned with UNEP for:

(a) Technical assistance to ECA member States, on request, for reviewing their existing industrial codes and for developing national guidelines with appropriate legislative instruments for industrial EIA and the siting of industries; and

(b) Training specialists on EIA applications within the context of the United Nations Industrial Development Decade for Africa.

Section III - Programme of action for environmental education and training in Africa

4. To implement this resolution, the UNEP Fund approved a joint ECA/UNEP project FP/3012-84-02 (2367) - Incorporation of environmental components into training programmes of 11 ECA-sponsored subregional and regional institutions. The project is being implemented by the ECA Environment Section, SDEHS Division with the assistance of consultants to develop a core-curriculum for use in a training of trainers workshop for the ECA-sponsored institutions, for them to add environmental dimensions to their existing and future training courses being carried out for member States.

Section IV - Regional co-operation on environmental matters in Africa

5. The resolution "strongly urges the Executive Secretary of ECA and the Executive Director of UNEP to increase their support to the ECA Environment Section for the effective implementation of the Environment in Africa work programme ...". As a result, UNEP has indicated its willingness to continue support of one of the two professional staff in the former ECA Environment Co-ordination Unit for the coming biennium 1986-1987. ECA has also requested two additional posts (one professional and one general service) from the General Assembly, within its Environment in Africa programme budget proposals for 1986-1987 to fill the gap created, as the joint ECA/UNEP project FP/0302-77-02(1317), strengthening environmental capabilities of the regional commissions (Africa), is being gradually phased out.

Resolution 499 (XIX): Regional Plan of Action to Combat the Impacts of Drought in Africa

6. The resolution adopted the above Regional Plan of Action as an annex to the Report of the Scientific Round Table on the Climatic Situation and Drought in Africa (document E/ECA/CM.10/23). The adverse impacts of the prolonged drought and desertification on the African economy among other reasons, prevailed upon the ECA Conference of Ministers to submit a Special Memorandum on Africa's Economic and Social Crisis (E/ECA/CM.10/37/Rev.1) to the second regular session of the Economic and Social Council in July 1984 and to the 20th Ordinary Session of the Assembly of Heads of State and Government of the Organization of African Unity. The OAU Assembly adopted its resolution AHG/Res.132(XX) on economic problems in Africa on 15 November 1984 which set up a ministerial steering committee to plan for an OAU Economic Summit in 1985. The ECA Environment Section is preparing a contribution on the impacts of drought and desertification on the critical food situation and rehabilitation of agriculture in Africa for the OAU Economic Summit.

7. Furthermore, the United Nations Committee on Development Planning, at its 21st session in November 1984, prepared a statement on the critical economic situation in Africa for the General Assembly which adopted its resolution 39/29 of 3 December 1984 including a Declaration on the Critical Economic Situation in Africa (see paragraph 13 on the respective Plan of Action to combat drought and desertification). Also, the General Assembly, in resolutions 39/205 and 39/208, both of 17 December 1984 on countries stricken by desertification and drought, referred to the alarming climatic trends taking place in Africa as indicated by the Scientific Round Table on the Climatic Situation and Drought in Africa held at ECA headquarters from 20 to 23 February 1984 and by the Ministerial Conference for a Joint Policy to Combat Desertification organized by the Government of Senegal in Dakar from 18 to 27 July 1984 at which ECA participated. Operative paragraph 3 of resolution 39/205 "Notes with satisfaction the decision taken by the Governments of Djibouti, Ethiopia, Kenya, Somalia, the Sudan and Uganda to establish an intergovernmental body to combat the effects of drought and other natural disasters ... and to meet in Djibouti on 15 January 1985 to finalize the necessary arrangements ...". The meeting has since taken place.

Resolution 528 (XIX): Meteorological services to combat drought in Africa

8. This resolution is another follow-up from ECA resolution 473 (XVIII) of May 1983 for a Scientific Round Table on the Climatic Situation and Drought in Africa and from the statement made by the Director-General of the World Meteorological Organization at the ECA Conference of Ministers on the meteorological and climatic aspects of drought in Africa. Operative paragraph 4 of the resolution 528 (XIX) "requests the Executive Secretary to study with WMO and other concerned United Nations organizations and specialized agencies, the feasibility of establishing an advanced centre for meteorology in Africa or any other alternative institutional mechanism and to submit the study to the twentieth session of the Economic Commission for Africa".

9. The report of the Joint ECA/WMO Feasibility Study for an advanced centre for meteorology in Africa is a part of this report.

B. JOINT ECA/WMO FEASIBILITY STUDY TO ESTABLISH AN ADVANCED CENTRE FOR METEOROLOGY IN AFRICA - ECA RESOLUTION 528 (XIX) of May 1984

10. As requested by operative paragraph 5 of ECA resolution 528 (XIX) of May 1984 - Meteorological services to combat drought in Africa, this feasibility study to establish an advanced centre for meteorology in Africa or any other alternative institutional mechanism, is being submitted to the twentieth session of the Economic Commission for Africa, under the following headings:

I. Joint ECA/WMO Inter-Agency Meeting of the Feasibility Study
II. Background to the proposals made
III. Objectives of the proposed centre
IV. Activities of the centre
V. Resources required
VI. Criteria for site location for the centre
VII. Options for site location
VIII. Name of the centre
IX. Funding aspects
X. Recommendations

I. JOINT ECA/WMO INTER-AGENCY MEETING ON THE FEASIBILITY STUDY

11. An Inter-Agency Meeting on a feasibility study for an advanced centre for meteorology in Africa was organized by the United Nations Economic Commission for Africa (ECA) and the World Meteorological Organization (WMO) at the latter's headquarters in Geneva on 30 November 1984. Six United Nations organizations and agencies, namely ECA, FAO, UNRISD, UNSO/UNDP, UNEP and WMO were present at the meeting. The meeting finalized the report of the feasibility study carried out by WMO and ECA for the ECA Conference of Ministers, as indicated below.

II. BACKGROUND TO THE PROPOSALS MADE

12. At its ninth meeting, held in April 1983, the ECA Conference of Ministers adopted resolution 473 (XVIII) in which it urgently requested the Executive Secretary of ECA to organize a special Scientific Round Table to "examine the causes, periodicity, trends and effects of drought on the African economies and to propose measures that can be taken in the short, medium and long terms to deal with the problem". The same resolution also appealed to the relevant United Nations organizations to collaborate actively with ECA in this urgent task. In response, WMO organized an expert group meeting on the climatic situation and

drought in Africa in October 1983 and produced a report on this topic (WMO World Climatic Programme series WCP-61). This was followed by a second preparatory meeting on the impacts of drought in Africa which was organized by UNEP in collaboration with ECA, WMO, UNSO, FAO, UNESCO and other organizations. The Scientific Round Table on the Climatic Situation and Drought in Africa was held by ECA in Addis Ababa in February 1984 with the active collaboration of the aforementioned organizations and OAU. The Round Table considered a number of working papers which have been prepared on the basis of the two preparatory meetings in addition to other reports on drought from other individual African countries, and finally adopted a draft Regional Plan of Action to Combat the Effects of Drought in Africa.

13. In May 1984 the ECA Conference of Ministers met to consider, among other topics, the subject of the climatic situation and drought in Africa and in particular the draft Plan of Action which they adopted. At this meeting Professor G.O.P. Obasi, Secretary-General of the World Meteorological Organization, presented a statement on this topic in which he proposed the formation of an Advanced Centre for Meteorology in Africa for applied research on the weather and climatic anomalies in Africa to improve the use of meteorological information in critical human activities such as food production,water management, and energy usage. The ECA Conference of Ministers adopted resolution 528 (XIX) which requested "the Executive Secretary to study with WMO and other concerned United Nations organizations and specialized agencies the feasibility of establishing an advanced centre for meteorology in Africa or any other alternative institutions, mechanisms and to submit the study to the twentieth session of the Economic Commission for Africa".

III. OBJECTIVES OF THE PROPOSED CENTRE

14. It is to improve the understanding of meteorological data and information for application throughout Africa in order to increase food production, improve water resources management and develop alternative energy sources, especially in arid lands.

15. To achieve this, it is necessary to develop competent manpower and institutional capabilities for a better understanding of atmospheric processes in Africa which affects critical human activities and would enhance our knowledge of the onset, duration and mechanisms of rainy seasons as well as the occurrence of catastrophic events such as drought, floods and tropical cyclones.

IV. ACTIVITIES OF THE CENTRE

16. It was agreed at the Inter-Agency Meeting that the activities of the centre should not be given any priority order of sequence; they should be objective-oriented with emphasis on multidisciplinary, operational aspects, and should also cater for the publication of studies by scientists on applied meteorology in Africa. In summary, the following activities were proposed for the centre:

(a) Provide a meteorological and hydrological watch system over Africa for the rains, drought, floods and cyclones, which may have profound effect on the economy and life of the people;

(b) Conduct applied research in meteorology for a better understanding of atmospheric and climatic processes which produce the rainy seasons, drought, floods and tropical storms;

(c) Determine the meteorological processes over the tropics and arid lands of Africa to classify the climate and define the major weather systems which make-up the total climate;

(d) Issue daily weather forecasts and bulletins of recent past weather in Africa using modern technology such as computers and satellites to produce update maps of monthly, seasonal and annual climate and variability;

(e) Develop methods to apply meteorology to critical human activities such as food production, management of water resources, new and renewable energy management and the environment;

(f) Integrate applied research in meteorology throughout institutions in Africa;

(g) Collaborate with centres outside Africa on studies of meteorological problems and applications of importance to Africa;

(h) Facilitate education and training for African scientists and technicians to gain experience in meteorological research and applications, by organizing workshops, seminars and refresher courses related to meteorology and its impact on agriculture, land use practices, water resources and energy development;

(i) Develop a regional network with the mass media for dissemination of information on meteorological events and their impacts on the national economy and life of the people in Africa;

(j) The Centre should facilitate data acquisition from various centres in the region; and

(k) Act as a depository library for meteorological reference materials on Africa.

V. RESOURCES REQUIRED

17. The Inter-Agency Meeting agreed that the centre would be developed in two phases: phase I up to three to five years and then phase II within five years of establishment. Core resources required were: a staff complement, buildings

and room for expansion; a large computer with several microcomputers for data processing; telecommunications linkages with satellites, with the WMO Regional Meteorological Centres (RMC), Regional Telecommunication Hub (RTH) and the World Weather Watch Main Trunk Circuit for global data. It was further agreed that for the report to the next ECA Conference of Ministers in 1985, a detailed programme for phase I as a preparatory assistance project document should be drawn up by ECA and WMO; that the minimum core of staff and facilities required for producing useful outputs should be indicated (the ECA/WMO preparatory assistance project document is attached as annex I); that the telecommunications network should include dissemination of outputs to users in different parts of Africa, with the possibility of involving ITU in such activities.

VI. CRITERIA FOR SITE LOCATION FOR THE CENTRE

18. The following are the criteria for locating the centre:

(a) Co-locate with an African institution which has recognized capability in applied activities in meteorology.

(b) Have ready access to research and application institutes in agriculture, agro-pastoralism, water management and renewable energy both in Africa and outside the region.

(c) Have ready access to meteorological data, especially current and recent past data available on the WMO World Weather Watch (WWW), preferably through a Regional Meteorological Centre (RMC) and a Regional Telecommunications Hub (RTH). The RTH should be preferably in the WWW Main Trunk Circuit to have access to global data.

(d) Have adequate computer faculities.

(e) Have access to meteorological satellite data.

(f) Have existing facilities to build on, to economize and to permit fairly rapid implementation of phase I. For the future, provide opportunities for expansion.

(g) Be feasible as soon as possible and within three years to implement phase I.

VII. OPTIONS FOR SITE LOCATION

19. WMO informed the meeting that the five options presented were obtained from its Education and Training Centre at headquarters with emphasis on tropical meteorology for drought and desertification control; hence there was no need for a joint team to visit each of the five sites considered: that is, Nairobi, Kenya; Cairo, Egypt; Niamey, Niger; Oran, Algeria; and Dakar, Senegal.

20. Using the above criteria for site location of the proposed centre, Nairobi and Cairo were found to satisfy the seven items listed. Niamey lacked adequate computer facilities for applied research even though the WMO AGRHYMET Centre located there has ongoing teaching activities in meteorology. Oran does not yet have an established meteorology department in the local university and the computer facility available at the WMO Regional Meteorological Centre (RMC) will be inadequate for the work of the centre. Dakar has computer facilities at the university but it is inadequate for applied research and applications in meteorology, in particular to numerical weather prediction models.

21. The Inter-Agency Meeting agreed that Nairobi compared to Cairo is already a centre for many United Nations activities related to the subject involved in the applications of meteorology. FAO pointed out that Nairobi had a very good air traffic and communications system to facilitate work for foreign and African scientists, and ECA pointed out that a Regional Centre for Services in Surveying, Mapping and Remote Sensing (RCSSMRS) was already located in Nairobi.

VIII. NAME OF THE CENTRE

22. Five names were proposed to emphasize the operational and multidisciplinary nature of the centre, namely:

(a) Advanced Centre for Meteorology in Africa (see resolution 528 (XIX));

(b) African Institute for Meteorological Research and Application (AMIRA);

(c) African Development and Operational Centre in Meteorology;

(d) Centre for the Application of Meteorology to Integrated Development in Africa (CAMIDA): and

(e) African Centre of Meteorological Applications for Development (ACMAD).

The meeting agreed on the fifth name above for the proposed centre.

IX. FUNDING ASPECTS

23. The Inter-Agency Meeting noted the difficulties ECA was experiencing in convincing African Governments to finance some of the ECA-sponsored regional and subregional institutions. It was pointed out that the United Nations Trust Fund for African Development (UNTFAD), which usually funds such projects, is usually replenished biennially at a pledging conference after every ECA Conference of Ministers; however, resources have dwindled from about $US10 million in 1980-1981 to about just over $US1 million at the last pledging conference. The UNSO/UNDP representative pointed out that from experience,

financial resources for the centre should be sought from UNDP, the World Bank and bilateral donors outside Africa. ECA suggested that African Governments can contribute to the development of the centre by providing fellowships to second their scientists to work at the centre for limited periods of time. It was agreed to defer the question of funding the centre until after the results of the next ECA Conference of Ministers in April 1985.

X. RECOMMENDATIONS

24. The Inter-Agency Meeting agreed on the following recommendations whilst accepting the principle of non-proliferation of centres in Africa. Also, that even though the centre must be located at one site, there must be an explicit and continuing link to other existing centres in Africa and elsewhere, both in the relevant multidisciplinary fields and within the meteorological community.

(a) Both Nairobi and Cairo appear to have the necessary attributes for a prompt implementation of phase I and the potential for growth into phase II. However, taking into account the geographical location of Nairobi within Africa and the other points made above under section VII - Options for site location when compared to Cairo, Nairobi offered the best potential for site location;

(b) A joint inter-agency team should visit Nairobi in January 1985 to investigate the feasibility with the Government of Kenya for Nairobi as a site location and to study the network of assistance required with the other centres in Nairobi;

(c) An inter-agency meeting be held at the end of the next (eleventh) ECA Conference of Ministers in April 1985 to discuss follow-up actions;

(d) A consultative meeting should be organized by ECA for the users and for United Nations experts to investigate the users' needs so as to develop a useful activity performance for the centre;

(e) African Governments must be involved from the beginning to ensure their political support and the National Meteorological Services should also be involved to provide the necessary basic weather and other related data;

(f) A mechanism should be developed so that users regularly evaluate the output-products from the centre for their usefulness to users' needs;

(g) The name of the centre should be African Centre of Meteorological Applications for Development (ACMAD);

(h) ECA and WMO should develop a preparatory assistance project proposal for a minimum core staff and facilities to submit to the twentieth session of the Commission in April 1985 for the funding of phase I (1985-1987).

C. MISSION REPORT ON THE INTER-AGENCY CONSULTATIONS WITH THE GOVERNMENT OF THE REPUBLIC OF KENYA ON THE ESTABLISHMENT OF AN AFRICAN CENTRE OF METEOROLOGICAL APPLICATIONS FOR DEVELOPMENT (ACMAD)

25. In response to one of the recommendations of the feasibility study carried out by ECA/WMO to establish an advanced centre for meteorological applications in Africa, a consultative meeting was held on Monday 13 May 1985 with Officials of the Government of the Republic of Kenya on the project proposals to establish an African Centre of Meteorological Applications for Development (ACMAD). The morning was occupied with visits to examine the facilities available at the Kenya Meteorological Department within the Ministry of Transport and Communications, the University of Nairobi and the ECA-sponsored Regional Centre for Services in Surveying, Mapping and Remote Sensing (RCSSMRS). Then the consultative inter-agency meeting was held at 4 p.m. on the same day at the Kenya Meteorological Department, Dagoretti, Nairobi.

26. The visit to the Kenya Meteorological Department showed that the following facilities were available to promote the establishment of the African Centre of Meteorological Applications for Development (ACMAD) in Nairobi:

(a) Data Processing System(DPS): it carries out two functions, namely real-time processing and, climatology and batch processing. The dual system consists of two computers (Mitra 625 of 1MB memory), 3 on-line disc drives each with 300 MB, 2 magnetic tape drives, 1 line printer, 1 card reader, 10 visual display units, 3 plotting tables, 2 logabax printers and an Operating system-MMT 2;

(b) Regional Meteorological Centre (RMC) is co-located with the National Meteorological Centre (NMC), as a WMO set-up, together with the Area Forecast Centre (AFC) of ICAO. The functions of the RMC is to collect, process and disseminate weather data from and to neighbouring NMCs and other RMCs, to issue surface analyses and forecasts and upper air data analyses at six upper levels to NMCs in Eastern Africa. Thus, the RMC issues forecasts for the general public, aviation, shipping, desert locust control and army work research. It was noted that the RMC has its own Satellite Receiving Station together with television monitors and a secondary weather radar, with automatic plotters;

(c) Regional Telecommunications Hub (RTH) is equipped for the reception and transmission of data within Africa and other parts of the world.

(i) RTH Nairobi is one of several other RTH Centres in Africa (Cairo, Kano, Lusaka) which are on the Main Telecommunications Network (MTN) of the Global Telecommunication System (GTS). RTH Nairobi is linked to the MTN via Offenbach in West Germany and to other centres of the GTS circuit of WMO as well as to the Aeronautical Fixed Telecommunications Network (AFTN) of ICAO.

(ii) Within Africa, RTH Nairobi is linked to various centres (RTH, NMC and others) by:

- HF radio with RTH Cairo, RTH Kano, NMC Mogadishu, Addis Ababa;
- Satellite with RTH Lusaka and Re-Union;
- Landline teletype with NMC Dar-es-Salaam, Entebbe (when re-established);
- Via AFTN with Bujumbura, Kigali, Seychelles, Djibouti.

(iii) At the national level, RTH Nairobi is linked to four Data Collection Platforms (DCPs) at the two international airports (Jomo Kenyatta in Nairobi and Moi in Mombasa), Kisumu and Garissa. The four DPCs collect and transmit meteorological data from all over Kenya to the telecommunications computer (AMSS).

(iv) The RTH Nairobi is equipped with an Automatic Message Switching System (AMSS) known as the telecommunications computer which is also linked to the Data Processing System (DPS) computer by a medium speed link for real-time decoding, plotting and analysis of meteorological data. The AMSS has two low speed interfaces, one with possible connection to 32 telegraphic circuits and the other to connect 8 TOR/ARQ circuits. It also has 4 telegraphic circuits at medium speed interface with maximum speed of 2400 bits/sec.

(d) Institute of Meteorological Training and Research (IMTR) is a UNDP/WMO regional project to carry out training and research in meteorology and hydrology in cooperation with the University of Nairobi. IMTR offers courses for three classes of meteorological personnel, namely: WMO Class II - Met. Officers, WMO Class III - Met. Supervisors and WMO Class IV - Met. Observers, for both Kenya and other African countries. Special courses can be run for Air Traffic Controllers, Flight Engineers and Pilots, Telecommunications Officers/Assistants and Water resources technicians.

27. The inter-agency group with Government of Kenya officials then moved on to the University of Nairobi Faculty of Sciences at Chiromo Campus. The Dean of the Faculty of Sciences introduced the group to the Principal of the College then the group met the staff of the Department of Meteorology and others from the Departments of Mathematics and of Geography, who explained their various research interests in meteorology. An instrument to monitor the ozone layer was examined at the roof of the sience building. It was pointed out that the University of Nairobi is the only ozone monitoring centre on the equator! The group finally visited the University Computer Centre which has various data processing computers for general use of all departments in the university.

28. Next, the group visited the Regional Centre for Services in Surveying, Remote Sensing and Mapping (RCSSMRS) located in Nairobi. As the Centre was

moving out equipment and transferring to its permanent buildings in Nairobi, not much was seen. The Centre was established in March 1975 as an intergovernmental institution operating under the aegis of the ECA and the OAU. The centre is composed of nine contracting member States with 12 other member States now participating in its activities. The main purpose of the centre is to provide services in surveying, mapping and remote sensing to ECA/OAU member States. It is funded by the contracting member States and international donors (USAID, IDRC and UN agencies).

29. The major activities of the RCSSMRS Centre are located in four departments, namely: Satellite Remote Sensing, Geodesy, Cartography and Engineering. The Centre can provide assistance to the ACMAD Centre in the interpretation of remote sensing satellite images for changes in natural resources,such as forests, vegetation, other water and agriculture, in order to build up an early warning system for drought and desertification control; in land resources assessment, monitoring and mapping; in monitoring of large dams for water levels and earth movements; in utilizing the hydrological survey data; and in the maintenance and caliberation of instruments, computers and telecommunications equipment.

30. Two inter-agency meetings were held with the Government of Kenya Officials, the first on Monday 13 May 1985 to present and discuss the documents on the proposed Centre (ACMAD) and the second meeting on Friday 25 May 1985 to receive comments from the Government Officials. Both meetings were held at the Institute of Meteorological Training and Research (IMTR) Conference Room within the Kenya Meteorological Department at Dagoretti, Nairobi, under the chairmanship of the Acting Director of Meteorology. Participants at each meeting were from ECA, WMO, UNEP, (with UNSO, FAO and RCSSMRS unavoidably absent), together with Government of Kenya representatives from the Meteorological Department, the Ministry of Agriculture and Livestock Development, the Ministry of Water Development, the Ministry of Foreign Affairs and the University of Nairobi. The Ministry of Energy and Regional Development and the Ministry of Environment and Natural Resources sent their apologies.

31. At the meeting of 13 May 1985, the ECA representative presented the documents which had been adopted by the ECA Conference of Ministers namely, E/ECA/CM.11/15/Add.1 on the feasibility study and E/ECA/CM.11/15/Add.1/Rev.1, the project document to establish an African Centre of Meteorological Applications for Development (ACMAD), together with a Report of an Ad-hoc Inter-Agency meeting held during the same Conference of Ministers with the delegation of the Government of the Republic of Kenya to the conference. He highlighted resolution 540 (XX) in which the ECA Conference of Ministers resolved to establish the Centre (ACMAD) and requested the ECA and WMO to carry out the necessary additional studies to facilitate the availability of meteorological data for ACMAD from the African countries through the regional telecommunications system.

32. The Deputy Secretary General of WMO then stressed the need for the Centre(ACMAD) to be an international centre similar to the European Centre for Medium Range Weather Forecasting established by 14 member countries. He said that the centre should have a legal entity as such, but cooperating with the existing regional centres and fit into the World Weather Watch/Global Telecommunications System and its Data Processing Systems as well as with the World Climate Research Programme. He informed the meeting that for Phase II, ACMAD would require high speed computer facilities and direct satellite receiving and processing systems for images from NOAA and METEOSAT satellites.

33. After comments were made on the above two presentations by ECA and WMO, several Kenya Government Officials expressed the need to discuss the finer details of the project proposals with the University of Kenya. Then the group will meet again with the United Nations representatives in the following week as they could still be in Nairobi attending the UNEP Governing Council Meeting. The Chairman then adjourned the meeting to Friday 24 May 1985.

34. On 24 May, 1985, the meeting was reconvened at 3 p.m. at the same place under the same chairman. He stated that the Government of Kenya had decided to locate the Centre (ACMAD) in the Regional Institute for Meteorological Training and Research within the Kenya Meteorological Department instead of at the University of Nairobi by agreement with the latter, in view of the excellent facilities already present at the Institute including a new VAC 750 computer which was being installed. The meeting agreed to this after taking into account the need for easy access of the University of Nairobi academic staff and students to the ACMAD centre for training and research purposes.

35. Next the Chairman pointed out certain amendments which the Government of Kenya would like to incorporate into the ACMAD project document. These were discussed and the following amendments were agreed upon:

(a) A study should be carried out based on ECA resolution 540 (XX) of April 1985 to strengthen the capabilities of National Meteorological Centres in collecting, transmitting and receiving data from the ACMAD Centre;

(b) Provision should be made for expendable items such as vehicles for the centre and also for silver paper for use in satellite photographic data collection at an estimated cost of US$70,000 duty free, annually;

(c) Financial resources will be required by ACMAD for a telecommunications link to New Delhi, India in view of the effect of the Monsoon on Africa's weather and also for the up-grading of the telecommunication linkages with regional centres (RTHs) in Lusaka, Kano, Cairo, Dakar and Brazzaville, at an estimated cost of US$130,000 annually;

(d) Clarification was required on the involvement of national meteorological centres in the establishment and functioning of the ACMAD Centre. For this, ECA pointed out that the revised project document after this consultation with the Government of Kenya will be discussed at the 3rd Meeting of the Joint Intergovernmental Regional Committee on Human Settlements and Environment to be held at ECA, 22-26 July 1985. Then, by arrangement with WMO, the document will be presented at a WMO regional meeting being organized by the WMO Regional Office for Africa in Burundi for November 1985, for inputs from the Chief Meteorologists in the African countries;

(e) On the question of the acquisition of meteorological data from the open seas through the recruitment of ships plying the relevant oceans bordering the Africa region, the WMO representative promised to look into the matter at headquarters. Later on, he sent the final Report of a WMO Meeting on the Automated Shipboard Aerological Programme (ASAP) held in Geneva, 26-28 February 1985 as well as a brochure on ASAP. ECA is of the opinion that since ASAP is a sophisticated programme being developed by a few industrialized countries, ACMAD should not embark on it as yet, at least not until during the Phase III period.

36. Finally, the Chairman thanked the United Nations representatives, the University of Nairobi academic staff and his colleagues as Government of Kenya Officials, for their cooperation during the consultations on the project proposals for the establishment of the Centre (ACMAD). He then closed the meeting.

Annex I

UNITED NATIONS SUDANO-SAHELIAN OFFICE AND

PROJECT OF THE GOVERNMENTS OF ALL AFRICAN MEMBER STATES
OF THE ECONOMIC COMMISSION FOR AFRICA

Draft Project Document

Project title:	ESTABLISHMENT OF AN AFRICAN CENTRE OF METEOROLOGICAL APPLICATIONS FOR DEVELOPMENT (ACMAD)
Project number:	RAF/85/.....
Duration:	6 years
Sector:	Environment
Subsector:	Combating drought and desertification
Government implementing agencies:	Ministries responsible for the Meteorological Departments in ECA member States
Executing agency:	United Nations Economic Commission for Africa in co-operation with the World Meteorological Organization
Associated executing agencies:	FAO, UNEP, UNSO, UNRISD
Estimated starting date:	June 1985

		Phase I, 1986-1987	Phase II, 1988-1990
Government inputs:	(in kind)	$US 210,000	$US 510,000
UNSO input:		1,868,100	
ECA input:		118,000	177,000
WMO input:		138,000	207,000
FAO input:		62,000	93,000
UNEP input:		72,000	108,000
Grand total:		$US2,468,100	$US13,___,000

I. LEGAL CONTEXT

1. This project document shall be the legal instrument referred to as such in Article 1, paragraph 1 of the Assistance Agreement(s) between all African member States of the United Nations Economic Commission for Africa and the United Nations Development Programme signed by the parties on 30 May 1978. It is understood that all participating governments undertake to treat this project in the same manner as national UNDP-financed projects with regard to privileges and immunities.

II. THE PROJECT

A. Development objectives

2. The long-term objectives of this project are to promote a balanced development of the national meteorological services of African Governments so that the applications of meteorological data and information can contribute towards:

(a) Socio-economic development of the country on a scientific basis;

(b) Mitigating the effects of possible future drought or any other weather-related disasters such as floods, cyclones, tropical storms;

(c) Producing adequate and reliable meteorological and climatological data and information so necessary to promote individual and collective atmospheric scientific research, particularly on the anomalies of the weather and climate over African countries; and

(d) Conserving by rational use and exploitation, the natural resources particularly vegetation, water, food, marine and energy resources in the countries.

B. Immediate objectives

3. The more immediate objectives of the project are to:

(a) Strengthen national institutional capabilities and develop manpower training in the application and use of meteorological and climatological data;

(b) Provide climatic and meteorological data at regular intervals for use by national early warning systems for combating drought and desertification;

(c) Improve the use and applications of meteorological information and data collected throughout African countries in order to:

(i) increase food production and strengthen food security;

(ii) improve water resources management, especially in drought-prone and drought-stricken areas;

(iii) develop alternative renewable energy sources especially in arid lands;

(iv) to create a better understanding of atmospheric conditions in Africa which affect critical human activities;

C. Special considerations

4. The project to establish an African Centre of Meteorological Applications for Development (ACMAD) will promote technical cooperation (TCDC) among African countries most of which are affected by drought and desertification. The Centre will collect meteorological data and observations from each affected African country, from meteorological satellites and from the Global Telecommunications System of the World Weather Watch (WWW) on a regular basis. The centre will process and analyse the data by electronic computers, and disseminate regular reports on the weather patterns and trends over Africa. Thus one of the functions of the Centre will be to provide information as an early warning system for drought and desertification in the affected African countries.

5. The activities of the proposed centre ACMAD will complement the FAO Global Information and Early Warning System on Food and Agriculture and the work of the International Livestock Centre for Africa (ILCA) in assessing vegetation cover from NASA satellite observations.

6. Whilst the FAO Early Warning System is global and makes use of agrometeorological data from some Sahelian and some southern African countries in SADCC, the ILCA/NASA project and the ECA/WMO proposed ACMAD centre will cover the whole of Africa, with ILCA making use of satellite imagery of vegetation patterns and changes and ACMAD making use of ground and upper atmospheric observations of meteorological data for application to development activities.

D. Background and justification

7. The severity of the prolonged drought in Africa and its devastating affect on the African economy during this decade compelled ECA member States to adopt resolution 473 (XVIII) on the climatic situation and drought in Africa at the ninth meeting of the ECA Conference of Ministers held in Addis Ababa in April 1983. The Conference of Ministers resolution 473 (XVIII) urgently requested the Executive Secretary to convene a Scientific Round Table on the climatic situation and drought in Africa to, inter alia, "examine the causes, periodicity, trends and effects of drought on the African economies and to propose measures that can be taken in the short-, medium- and long-terms to deal with the problem". The same resolution also appealed to the relevant United Nations institutions to collaborate actively with ECA in this urgent task.

8. To initiate action, ECA held inter-agency consultations with WMO, FAO, UNESCO, UNEP, UNSO, UNDP, United Nations headquarters and OAU at a meeting at WMO headquarters, Geneva on 25 July 1983 to implement the resolution. As a result, WMO convened an

Expert Group meeting on the "Climatic aspects of drought in Africa" at its Headquarters, Geneva on 6 and 7 October 1983. This was followed by a multidisciplinary meeting on the "Impacts of drought on the socio-economic systems in Africa", organized by UNEP in Nairobi from 13 to 16 December 1983 under its project RA/4102-84-01(2459). The preparatory meetings produced three documents, including a draft Regional Plan of Action to combat the impacts of drought in Africa, which were discussed at the Scientific Round Table held at ECA headquarters from 20 to 23 February 1984. In addition, experts from 25 African countries presented reports on drought in their countries at the meeting.

9. After discussion of the report of the Scientific Round Table at the tenth meeting of the ECA Conference of Ministers in May 1984, resolutions 499 (XIX) on the Regional Plan of Action and 528 (XIX) on meteorological services to combat drought in Africa, were adopted. To implement resolution 528 (XIX) which called for the establishment of an advanced centre for meteorology in Africa, ECA and WMO prepared a feasibility study which was discussed at an Inter-Agency meeting held at WMO Headquarters in Geneva on 30 November 1984. The report of the feasibility study will be submitted to the twentieth session of the United Nations Economic Commission for Africa in April 1985. This project is therefore meant to execute the activities suggested in the feasibility study to establish the African Centre of Meteorological Applications for Development (ACMAD), the agreed name for the advanced centre.

10. During this current and prolonged drought, experts at the Scientific Round Table pointed out that reliable and continuous weather data, which are necessary to detect and warn of droughts, are not readily available in some parts of Africa. Hence, the Advanced Centre of Meteorological Applications for Development will collate meteorological information and data from all over Africa as well as from meteorological research centres in developed countries interested in the African weather and climate, in the course of serving as a depository library for meteorological reference material on Africa. The main justifications for the advanced centre are spelt out in the activities listed; in short, the centre will analyse the meteorological data collected, initiate and co-ordinate applied research on the weather and climate, process the information for immediate distribution to all African countries on a regular basis for the application of meteorology to critical human activities such as food and agricultural production, water resources management and the development of renewable energy resources.

E. Outputs

11. The African Centre of Meteorological Applications for Development (ACMAD) will provide the following outputs as services to African countries:

(a) Preparation of agreements between the Government of Kenya and ECA on behalf of its member States for the establishment, support and use of the advanced centre for meteorology in Africa;

(b) Convening and servicing of an intergovernmental expert group meeting to investigate the needs of users, ensure the support of users in providing the necessary basic weather data, and develop a work programme and budget for the centre;

(c) Issue of daily weather forecasts and bulletins of recent past weather for all of Africa, using modern technology such as computers and satellites. Initially the forecasts will be for short periods (up to two days), and later on for seasons and interannual climate variations as skill develops for these extended period predictions;

(d) Report to African countries on the results of applied research in meteorology to better understand the climate and atmospheric processes which produce drought, floods, tropical storms, rainy seasons and other atmospheric event. In particular, determination of the meteorological processes over tropical and subtropical parts of the continent to classify the climate and define the major weather systems which make up the total climate;

(e) Serve as a meteorological/hydrological watch system over the continent of Africa to alert countries on significant meteorological phenomena, such as drought, floods, tropical storms and rainy seasons, which may have a profound effect on the economy and life of the people,

(f) Provide assistance in solving climate-related problems of development in African countries through the co-ordination of an integrated programme of applied research in meteorology throughout the network of research institutions in Africa;

(g) Collaboration with other centres outside of Africa to jointly study meteorological problems and applications of importance to Africa;

(h) As required, production of updated maps of the monthly, seasonal and annual climate with both mean values and measures of variability for African countries;

(i) Development of regional networks for dissemination of information on meteorological events and study of their impacts on national economies and life of the people throughout Africa;

(j) Production of meteorological guidelines for applying meteorological information to critical human activities such as food production, water resource management, and renewable energy (water, solar and wind);

(k) Depository library in Africa for meteorological reference materials;

(l) Serve as manpower development centre for African scientists through training and gaining experience in meteorological research and applications, with opportunities provided for workshops, seminar and refresher courses for senior scientists and technical personnel working in areas related to meteorology and its impact on agriculture, land-use practices, water resources and energy development.

F. Activities

12. During the feasibility studies for the establishment of the centre, the following activities are being carried out during the 1984-1985 biennium:

	Activities	Place	Time schedule
(a)	Preparation of feasibility study for an advanced centre for meteorology in Africa, by WMO and ECA	Within Africa	June to September 1984
(b)	ECA/WMO Inter-Agency meeting to consider feasibility study report	WMO, Geneva	30 November 1984
(c)	Report to the twentieth session of the Commission/Eleventh meeting of ECA Conference of Ministers on the feasibility study carried out including a preparatory assistance proposal for discussion	Addis Ababa, Ethiopia	15-25 April 1985
(d)	ECA Inter-Agency consultative meeting for follow-up action, programming and financing of the project	Addis Ababa, Ethiopia	23 April 1985 (between TEPCOW and Conference of Ministers meetings)
(e)	Inter-Agency Mission (ECA, UNEP, WMO) to the Government of Kenya to assess Nairobi as a site location for the centre	Nairobi, Kenya	13 May 1985

13. Next after the feasibility study has been accepted by the ECA Conference of Ministers, is the establishment of the centre. This will involve the following activities under two phases, Phase I - 1986-1987 and Phase II - 1988-1990.

(a) Phase I, 1986-1987

Activities	Place	Time schedule
(i) At the third meeting of the joint Intergovernmental Regional Committee on Human Settlements and Environment, discussion will be held on the needs of the users and the support of users in providing the basic weather data to the centre; also a work programme and budget for ACMAD will be drawn up	Addis Ababa, Ethiopia	22-26 July 1985

Activities		Place	Time schedule
(ii)	Finalizing ECA/WMO agreement with the Government of Kenya and establishment of the centre at suitable existing buildings	Nairobi, Kenya	August to December 1985
(iii)	Recruitment of Executive Director of ACMAD by ECA and WMO, and of five scientific staff, 20 technicians/ secretaries and two administrative staff	Addis Ababa, Geneva, Nairobi	August to December 1985
(iv)	Acquisition of data processing equipment namely, Mini Computer (VAX 750), five microcomputers and software for the ACMAD centre	Nairobi, Kenya	January to April 1986
(v)	Establishment of networks within Nairobi with the Regional Meteorological Centre (RMC) and with the Regional Telecommunications Hub (RTH) of World Weather Watch (WWW)	Nairobi, Kenya	January to June 1986
(vi)	Printing and dissemination of publications and reports on weather data applications for development in Africa	All African countries	Starting April 1986 at fortnightly intervals
(vii)	Establishment of regional and global networking with the WMO Main Trunk Circuits of the World Weather Watch (WWW), and with satellites monitoring African weather and climate	Nairobi, Kenya	July to August 1986
(viii)	Development of work programme and budget for ACMAD in Phase II	Nairobi, Kenya	July to August 1986
(ix)	Two annual training workshops for 20 national specialists each on meteorological applications for development	At ACMAD, Nairobi	November 1986 and November 1987

(b) Phase II, 1988-1990

Activities		Place	Time schedule
(i)	Provision of space for the expanded centre	Nairobi, Kenya	January to December 1988
(ii)	Build-up of professional, technical and administrative staff according to the work programme financed for Phase II	ACMAD, Nairobi	1989-1990
(iii)	Acquisition of additional equipment such as Computer Main Frame (equivalent to CRAY II), another VAX 750 Mini-computer and some more (10-15) microcomputers	ACMAD, Nairobi	January to December 1989
(iv)	Extension of telecommunications networks to other major global meteorological centres and acquisition of digital satellite data	Nairobi, Kenya	June to December 1989
(v)	Organization of three annual training workshops for 20 African national specialists each on the application of meteorology for development	At ACMAD, Nairobi	November 1988, 1989 and 1990
(vi)	Preparation of terminal report of the ACMAD project	Nairobi	December 1990

G. Inputs

14. At the Inter-Agency meeting organized by ECA and WMO to discuss the feasibility study to establish the African Centre of Meteorological Applications for Development (ACMAD), FAO, UNEP and UNDP/UNSO expressed an interest to collaborate in the work of the centre. For the successful operation of the centre, the following inputs are required:

(a) African Government inputs

The feasibility study has recommended that Nairobi be the site location for the centre. Details will be worked out with Kenya for the location and for access to the WWW's Regional Meteorological Centre (RMC) and the Regional Telecommunications Hub (RTH) operated by the National Meteorological Services, Kenya. Accommodation for

ACMAD may be found in existing facilities during Phase I (1986-1987) of the project whilst the Government of Kenya will be expected to provide building facilities within Nairobi for the future expansion of the centre during Phase II (1988-1990). Since the Centre will cater for regional and national needs in the application of meteorology to development, ECA member States will contribute towards the running cost of the centre as well as in kind by covering the travel and living expenses of national specialists in meteorology to work for short periods of three to six months at the centre. The direct contributions from African Governments are estimated to be:

(i)	Government of Kenya Meteorological Department (in kind) accommodation to ACMAD for Phase I (1986-1987	$US50,000
(ii)	ACMAD workshop facilities and local transportation for training participants (each workshop).....	50,000
(iii)	Travel and living expenses of national specialists seconded to work at ACMAD for 3-6 months, every year ..	30,000
(iv)	Provision of buildings for expansion of ACMAD for Phase II (1988-1990).....	250,000
	Grand total of Government contribution for Phase I:	$US210,000
	and Government contribution for Phase II:	$US510,000

(b) UNSO/UNDP Inputs

UNSO/UNDP's contribution to the project are expected to start after the ECA Conference of Ministers has accepted the Report of the ECA/WMO Feasibility Study to establish the African Centre of Meteorological Applications for Development (ACMAD) in 1985. During Phase I (1986-1987) and Phase II (1988-1990) UNSO/UNDP's contribution is estimated to be as follows:

Phase I, 1986-1987	M/M	In $US
(i) Personnel at ACMAD, Nairobi (per year)	2 years	2 years
a. Scientific Executive Director (L6)	24	170,000
b. Five senior scientists (L4/L5)	120	620,000
c. Short-term consultancy for training	12	25,000
d. Administrative support:		
i. 10 technicians/secretaries (G6-G9)	240	180,000
ii. 2 administrative assistants (L1/L4)	48	168,000
(ii) Travel of project personnel (ECA and WMO)		30,000
(iii) Mission cost (participation by UNSO)		10,000
(iv) Training workshops at ACMAD, Nairobi (one per year)		
a. Servicing, interpretation and translation for (10-14 days)-.....		20,000
b. 20 national specialists, travel and DSA for (10-14 days).....		60,000
Subtotal.....		1,283,000

(v) Equipment for ACMAD during Phase I (1986-1987)

a. None-expendable equipment

Quantity	Description	Cost in $US
1	Minicomputer (upgrading of VAX 750 already installed)	85,000
5	Microcomputers	25,000
1	Executive desk and chair	700
6	Junior executive desks and chairs	30,000
4	Secretarial desks and chairs	20,000
8	Office desks and chairs	40,000
5	IBM electric typewriters	90,000
5	Typewriter carrier desks	400
20	Filing cabinets with keys	10,000
20	Bookcases and/or shelves	10,000
	Sub-total.....	311,100

b. Expendable (including silver paper for satellite images) and purchase of 1 landrover and 2 cars for centre.....v.....	60,000 50,000
(vi) Reporting costs (Printing and dissemination of weather bulletins fortnightly and climate reports).....	24,000
(vii) Contingencies at ACMAD.....	5,000
(viii) Telecommunications equipment link to New Delhi and 5 Regional Telecom. Hubs in Africa.....	130,000
UNSO Grand total for Phase I (1986-1987):	1,868,000

Phase II, 1988-1990 (additional staff and equipment to Phase I)

		M/M	In $US
(i)	Personnel at ACMAD, Nairobi (per year)	3 years	3 years
	a. 5 additional senior scientists, (L4/L5)	180	1,200,000
	b. 10 additional technicians/secretaries, (G6-G9)	360	580,000
	c. 2 more administrative assistants, (L1/L4)	84	336,000

(ii) Equipment for ACMAD during Phase II, 1988-1990

a. Non-expendable equipment

Quantity	Description	Cost in $US
1	Computer Main Frame	8,500,000
10	Microcomputers	60,000
5	Junior executive desks and chairs	30,000
4	Secretarial desks and chairs	20,000
8	Office desks and chairs	45,000
4	IBM electric typewriters	90,000
4	Typewriter carrier desks	400
20	Filing Cabinets	10,000
20	Bookcases and/or shelves	10,000
1	Indexer	600
	Total	8,765,000

b. Expendable: software..... 60,000

UNSO/UNDP additional total for Phase II (1988-1990): 10,941,000

(c) WMO contribution

Since this project is jointly executed by WMO and ECA, the project officer at WMO has been working jointly with a counterpart at ECA. WMO will provide the technical expertise to establish and run the centre whilst ECA is dealing with the administrative and political matters connected with establishing the centre. Estimated contributions by the WMO's centres already located at Nairobi, to ACMAD network will be:

(i)	Project officer at WMO Headquarters 6 m/m	$US26,000
(ii)	Programme management support in Kenya	
	a) Regional Meteorological Centre at Nairobi 6 m/m	18,000
	b) Regional Telecommunications Hub 6 m/m.....	18,000
	c) Documentation, cables, sundry	7,000
	Total per year.....	69,000

(iii) WMO contribution for Phase I: $US138,000
and for Phase II: $US207,000
Total..... $US345,000

(d) Inputs by other agencies and organizations

The following inputs are expected from United Nations bodies which have expressed an interest in the project:

(i) FAO: The FAO Global Information and Early Warning System on Food and Agriculture depends for its effective functioning on the use of agrometeorological observations for monitoring the cumulative water balance of agricultural crops. The reports of such crop monitoring every 10 days in the Sahelian countries over the past eight years and in the SADCC countries during the 1983/1984 growing season, provide information for forecasting the crop situation in respect of pending or future drought. Hence, FAO may provide an agrometeorology specialist part-time to the centre to train nationals as well as to develop that area of the programme for the centre. FAO's contribution is estimated at:

a)	1 Agrometeorologist 6 m/m.....	$US 25,000
b)	Supporting secretarial staff.....	3,000
c)	Documentation, cables, sundry.....	3,000
	Total per year.....	$US 31,000
	Grand total of FAO contribution for Phase I:	$US 62,000
	and for Phase II:	$US 93,000
	Total.....	$US155,000

(ii) UNEP: Global Environmental Monitoring System (GEMS) and the World Climate Impact Programme (WCIP) being implemented by UNEP can contribute inputs towards the work programme of ACMAD especially in the use of remote sensing for meteorological observations and in computer sensing expert to work part-time in the centre with special attention to training and research, and applications of meteorology to development. UNEP's contribution is estimated at:

a)	1 Remote Sensing Expert 6 m/m per year.....	$US30,000
b)	Secretarial support 6 m/m per year.....	3,000
c)	Documentation, cables and sundry.....	3,000
	Total per year.....	$US36,000
	Grand total of UNEP's contribution for Phase I:	$US 72,000
	and for Phase II:	$US108,000
	Total.....	$US180,000

(e) Contributions from ECA

The project officer at ECA has been working together with a counterpart in WMO and co-ordinating with the other United Nations institutions to carry out the feasibility study. The ECA project officer will continue in this role, with supporting staff, until ACMAD is established and fully operational in Phase I and II. Thus ECA's contribution in staff and administrative support is estimated at:

(i)	Programme management support, 6 m/m.....	$US 24,000
(ii)	Project officer 6 m/m.....	26,000
(iii)	Secretarial support 6 m/m.....	6,000
(iv)	Documentation, cables, sundry.....	3,000
	Total per year	$US 59,000

Grand total for Phase I: $US 118,000 and
for Phase II: $US 177,000
Total..... $US 295,000

(f) Estimated project cost

		Per year	Total for Phase I	Total for Phase II
		(in $US)		
(i)	ECA contribution	95,000	118,000	177,000
(ii)	WMO contribution	56,000	112,000	168,000
(iii)	FAO contribution	31,000	62,000	93,000
(iv)	UNEP contribution	36,000	72,000	108,000
(v)	Member States contribution	-	210,000	510,000
(vi)	UNSO/UNDP contribution	-	1,868,100	12,471,000

H. Work plan

15. A provisional work plan to indicate the major activities to be carried out each quarter of a year from 1985 to 1990, is attached as Annex II B. A more detailed work plan for each phase, I - 1986-1987 and II - 1988-1990 will be worked out for the implementation of the project, in consultation with UNSO/UNDP, WMO and ECA.

I. Preparation of the framework for effective participation of national and international staff in the project

16. After the establishment of the Centre (ACMAD) participating governments will second national experts in meteorology to work at the centre for limited periods of three to six months, as stated under government inputs in paragraph 14 (a) of this project document.

J. Development support communications

17. Not applicable.

K. Institutional framework

18. The Joint Intergovernmental Regional Committee on Human Settlements and Environment (Joint IGRC/HUS/ENV), as a subsidiary body of the Commission will review progress on the establishment of the centre as well as on the work programme of ACMAD after establishment. The Joint Committee (IGRC/HUS/ENV) will report through the Technical Preparatory Committee of the Whole to the ECA Conference of Ministers of Planning and Economic Development. These legislative bodies of the Commission will formulate policies, issue directives and take decisions on the work of the centre (AMCAD).

19. The African Centre of Meteorological Applications for Development (ACMAD) will be governed by a management authority such as a board of governors consisting of representatives from various ministries (agriculture, water resources, environment, natural resources, energy, forestry, wildlife, meteorology, development and planning) of the Government of Kenya, and representatives from UNSO, ECA, WMO, FAO, UNEP, the UNDP Resident Co-ordinator, the Department of Meteorology at the University of Nairobi, Kenya, the Director for the Regional Centre for Services in Surveying, Mapping and Remote Sensing (RCSSMRS), Kenya, the Kenya National Council for Science and Technology, with the Executive Director of ACMAD acting as Secretary to the board. The Board of Governors will report to the Joint Committee (IGRC/HUS/ENV) at the latter's meetings every 18 months.

20. The Economic Commission for Africa and the World Meteorological Organization will serve as joint executing agencies for the project from the feasibility stage until the final establishment of the centre under Phases I and II. The ECA Secretariat, through its Environment Section, Social Development, Environment and Human Settlements Division will provide the necessary administrative backstopping whilst professional and technical guidance to ACMAD will be provided by the WMO Secretariat through its World Climate Programme Department for both training and research.

21. As a result of Inter-agency consultations with representatives of the Government of the Republic of Kenya during 13-26 May 1985, the following arrangements were agreed upon:

(i) that the Centre ACMAD will be an operational international centre sharing facilities with the existing Kenya Meteorological Department of the Ministry of Transport and Communications and the University of Nairobi at the national level, as well as with other WMO/ICAO-sponsored regional organizations in Africa, such as: the Regional Meteorological Centre (RMC), the Regional Telecommunications Hub (RTH), the Area Forecast Centre (AFC) and the Regional Institute of Meteorological Training and Research (RIMTR), all of which are located in Nairobi;

(ii) to carry out its functions, ACMAD will collaborate with the Kenya National Meteorological Centre (NMC) which is already engaged with Numerical Weather Prediction (NWP) modelling, long and medium range weather forecasting, World Climate Research Programme (WCRP of WMO), and the Global Observing Systems (GOS), the Global Telecommunications System (GTS) and the Data Processing Systems for the World Weather Watch (WWW) programme activities;

(iii) it was agreed that ACMAD will be located within the Kenya Meteorological Department at the Regional Institute of Meteorological Training and Research (RIMTR) for Phase I instead of at the University of Nairobi. But for Phase II, ACMAD should be relocated into permanent buildings to operate fully as an international centre. At that stage, ACMAD will require high speed computer facilities to process complicated meteorological programmes within the region instead of sending them to Europe for processing, and it will also have its own satellite receiving and processing facilities to handle images directly from NOAA or METEOSAT satellites;

(iv) ACMAD when established will interact with the existing international scientific centres in Kenya, such as:

- the International Laboratory for Research on Animal Diseases (ILRAD)
- the International Centre for Insect Physiology and Ecology (ICIPE)
- the International Livestock Centre for Africa (ILCA branch)
- the International Centre for Research in Agro-Forestry (ICRAF)
- tge Ubterbatuibak Development Research Centre (IDRC)
- the Desert Locust Control Organization for Eastern Africa (DLCOEA)
- the Kenya Agricultural Research Institute (KARI) and
- the Regional Centre for Services in Surveying, Mapping and Remote Sensing (RCSSMRS).

L. Prior obligations and prerequisites

22. Not applicable.

M. Future UNDP or UNSO assistance

23. The provision of financial support for the establishment of the African Centre of Meteorological Applications for Development (ACMAD) during Phase I by UNSO is being supported by other United Nations organizations (ECA, WMO, UNEP, FAO). It is noted that the level of support for Phase II is far greater than that for Phase I, hence UNDP's assistance as well as bilateral support may have to be solicited for the successful implementation of the project.

III. SCHEDULE OF MONITORING, EVALUATION AND REPORTS

A. Monitoring and technical reviews

24. The UNDP Resident Representative accredited to the Government of Kenya will convene the meetings of the management authority of the Centre in Nairobi, in cooperation with the Director. He will monitor the implementation of the project in accordance with the policies and procedures established by UNDP/UNSO. ECA, WMO and UNSO will carry out technical reviews of the project activities at the end of Phase I and II.

B. Evaluation

25. The project will be subjected to evaluation in accordance with the policies and procedures established for the purpose by UNDP/UNSO. The organization, terms of reference and timing of evaluation will be decided by consultations between UNSO, ECA and WMO.

C. Progress and terminal reports

26. The project Director of ACMAD will prepare six monthly progress reports on the activities and achievements of the project with the cooperation of ECA and WMO. At the end of the project after Phase II, the executing agencies, ECA and WMO, will submit a comprehensive terminal report evaluating the overall performance of the project in relation to its objectives, its impacts and future trends for improving national capabilities to forecast drought.

IV. BUDGET

27. The estimated cost of the services and facilities to be provided for the project by UNSO is detailed in the budget section of this document, as Annex II A.

PROJECT BUDGET COVERING UNSO/UNDP CONTRIBUTIONS
(in US dollars)

Region: Africa

Project No.: RAF/85/.....

Project title: Establishment of an African Centre of Meteorological Applications for Development (ACMAD)

PHASE I

		1986		1987	
		M/M	$US	M/M	$US
10.00	PROJECT PERSONNEL				
11.00	EXPERTS				
11.01	Scientific Director (L6)	12	80,000	12	90,000
11.02	Senior Scientists (L4/L5)	60	300,000	60	320,000
11.03	Short-term consultants	3	12,500	3	12,500
11.99	Component total	75	392,500	75	422,500
13.00	ADMINISTRATIVE SUPPORT PERSONNEL				
13.01	Administrative Officer and one Admin.Assistant (L4/L1)	24	80,000	24	88,000
13.02	Secretarial support (G6-G9)	48	32,000	48	40,000
13.03	Technicians (G6-G9)	72	50,000	72	58,000
13.99	Component total	144	162,000	144	186,000
15.00	TRAVEL				
15.01	Travel of project personnel	-	15,000	-	15,000
16.00	MISSION COSTS				
16.01	Mission travel by UNSO	-	5,000	-	5,000
19.00	Component total	-	20,000	-	20,000

PHASE I

		1986		1987	
		M/M	$US	M/M	$US
30.00	GROUP TRAINING				
31.00	Servicing of 2 Training workshops	-	10,000	-	10,000
32.00	Travel and DSA for 20 participants for 10-14 days to each workshop	-	28,000	-	32,000
39.00	Component total	-	38,000	-	42,000
40.00	EQUIPMENT				
41.01	Expendable equipment	-	110,000	-	5,000
41.02	Non-expendable equipment	-	441,100	-	-
49.00	Component total	-	551,100	-	5,000
50.00	MISCELLANEOUS				
51.01	Reporting costs (translation, etc.)	-	10,000	-	14,000
51.02	Sundries (dissemination of fortnightly bulletins and climate reports)	-	2,500	-	2,500
51.99	Component total	-	12,500	-	16,500
99.00	Grand total for PHASE I 1986-1987	219	1,176,100	219	692,000
		=	1,868,100		

PHASE II

	Project component	1988 M/M	1988 $US	1989 M/M	1989 $US	1990 M/M	1990 $US
10.00	PROJECT PERSONNEL						
11.00	EXPERTS						
11.01	Scientific Director (L6)	12	92,000	12	95,000	12	98,000
11.02	Senior scientists (L4/L5)	84	502,000	96	576,000	120	722,000
11.03	Short-term consultants	4	13,000	4	14,000	4	15,000
11.99	Component total	100	607,000	112	685,000	136	835,000
13.00	ADMINISTRATIVE SUPPORT PERSONNEL						
13.01	Administrative Officer and one Admin. Assistant (L4/L1)	36	130,000	48	170,000	48	204,000
13.02	Secretarial support (G6-G8)	72	86,000	96	116,000	96	127,000
13.03	Technicians (G6-G8)	96	120,000	120	148,000	120	163,000
13.99	Component total	204	336,000	264	434,000	264	494,000
15.00	TRAVEL						
15.01	Travel of project personnel	-	17,000	-	20,000	-	23,000
16.00	MISSION COSTS						
16.01	Mission travel by UNSO	-	5,000	-	5,000	-	5,000
19.00	Component total	-	22,000	-	25,000	-	28,000
30.00	GROUP TRAINING						
31.00	Servicing of 3 Training workshops	-	10,000	-	10,000	-	10,000
32.00	Travel and DSA for 20 participants for 10-14 days to each workshop	-	30,000	-	30,000	-	30,000
39.00	Component total	-	40,000	-	40,000	-	40,000
40.00	EQUIPMENT						
41.01	Expendable equipment	-	20,000	-	20,000	-	20,000
41.02	Non-expendable equipment	-	-	-	8,765,000	-	-
49.00	Component total	-	20,000	-	8,785,000	-	20,000

PHASE II

	Project component	1988 M/M	1988 $US	1989 M/M	1989 $US	1990 M/M	1990 $US
50.00	MISCELLANEOUS						
51.01	Reporting costs (translations etc.)	-	15,000	-	16,000	-	17,000
51.02	Sundries (dissemination of fortnightly bulletins and climatic reports)	-	3,000	-	4,000	-	5,000
51.99	Component total	-	18,000	-	20,000	-	22,000
99.00	Grand total for PHASE II 1988 - 1990	304	1,043,000	376	9,989,000	400	1,439,000
			= 12,471,000				

K. WORK PLAN/PROJECT IMPLEMENTATION PLAN

For the Project Life Span

oject: Establishment of an African Centre of Meteorological Applications for Development (ACMAD)

oject number: RAF/85/.....

nding source: UNSO

vision/Programme: SDFHS Division - Environment in Africa Programme

Outputs and Activities	Primary Responsibility	Phase I - Implementation Schedule 1985 to 1987												
		1985 (Quarters)				1986 (Quarters)				1987 (Quarters)				Remarks
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	
1. Inter-Agency Mission to Govt. of Kenya	ECA/WMO	X												
2. Report of Feasibility Study on ACMAD to ECA Conference of Ministers	ECA		X											
3. Ad hoc Inter-Agency Meeting on follow-up action for ACMAD	ECA		X											
4. Report to 3rd meeting of Joint Intergovt. Committee on Human Settlements & Environment	ECA			X										
5. ECA/WMO Agreement with Govt. of Kenya to set up ACMAD	ECA/WMO				X									
Recruitment of Director and staff for ACMAD	ECA/WMO				X									
7. Acquisition of data processing and other equipment for ACMAD	ECA/WMO				X									

Phase I - Implementation Schedule 1985 to 1987

	Primary Responsibility	1985 (Quarters) 1st	2nd	3rd	4th	1986 (Quarters) 1st	2nd	3rd	4th	1985 (Quarters) 1st	2nd	3rd	4th	Remarks
Establishment of networks with WMO's RMC, RTH with ACMAD	WMO/ACMAD					X								
Printing and dissemination of weather reports by ACMAD	ACMAD					X	X	X	X	X	X	X	X	
Establishment of global networks with WMO/WWW main trunk and satellites	WMO/ACMAD							X						
Development of Work Programme and Budget for PHASE II	ECA/WMO/ACMAD								X					
Annual training Workshops for 20 nationals	ECA/WMO/ACMAD								X				X	

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